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Far away from home and (not) lonely: Relational mobility in migrants' heritage culture as a potential protection from loneliness

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ABSTRACT

Loneliness is a major health risk with particular relevance for migrants, who are faced with the challenge of establishing social networks to avoid social isolation after migration. We suggest that forming new relationships may be hampered or facilitated by characteristics of migrants' heritage culture (i.e., the culture that migrants were socialized in), specifically the level of heritage *relational mobility* (the amount of opportunities to form new relationships and individual choice regarding whom to relate to in the heritage culture). Individuals with higher (versus lower) heritage relational mobility may be able to more easily establish social networks after migration, because of being more experienced with forming new social relationships. As such, we hypothesized that they might be less susceptible to loneliness after migrating – at least in a host culture that is high in relational mobility. In two cross-sectional survey studies with samples from two of the largest groups of student migrants in the city of Groningen (Study 1: $n = 118$ German, $n = 97$ Chinese students; Study 2: $n = 119$ German, $n = 92$ Chinese students) in the Netherlands (i.e., a context with high relational mobility), higher heritage relational mobility was indeed related to lower loneliness. Having grown up in a cultural environment that offers opportunities to individually establish new social relationships may hence protect migrants from quite different heritage cultures from loneliness, at least if the host culture also offers such opportunities. We discuss alternative explanations, as well as theoretical and practical implications.

Introduction

Loneliness is a major health risk (Cacioppo, Grippo, London, Goossens, & Cacioppo, 2015; Holt-Lunstad, Smith, Baker, Harris, & Stephenson, 2015; Richard, Rohrmann, Vandeleur, Schmid, & Eichholzer, 2016; Smith & Victor, 2018) that is highly prevalent in most modern societies (Yang & Victor, 2011). Migrants may be particularly at risk for loneliness (Sawir, Marginson, Deumert, Nyland, & Ramia, 2008; Smith & Khawaja, 2011) because migration entails leaving behind one's existing social relationships while having to adapt to an entirely new cultural context. Against this backdrop, it may not come as a surprise that loneliness among migrants tends to be higher than in their host societies (Leung, 2001; Oei & Notowidjojo, 1990; Sawir et al., 2008; van den Broek & Grundy, 2017). To prevent negative health consequences, it is hence essential to identify what can protect such a high-risk group from loneliness. Much research has addressed how acculturation influences well-being after migration, including loneliness (e.g., Ajrouch, 2008; Birman, Trickett, & Vinokurov, 2002; Chavajay & Skowronek, 2008; Smith & Khawaja, 2011). However, we know less about the influence of migrants' *heritage culture* (i.e., the culture in which they were initially socialized and from which they moved away). We believe that characteristics of a heritage culture are likely to put individuals at risk for, or protect them from loneliness because of the

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norms about social relationships (e.g., whether it is normal and common to establish new friendships or choose one's relationships; Yuki & Schug, 2012) that are implied by culture (defined in line with previous work as shared ideas - i.e., shared norms, beliefs, or values; Chiu, Leung, & Hong, 2011). These norms should partly be internalized by the culture's members (Adams & Kurtiş, 2012) and hence impact on how they act in, and what they expect from, their relationships (Smith, Bond, & Kağıtçıbaşı, 2006). As such, cultural norms may influence how migrants relate to others even after having moved to a different cultural context. They may thus hamper or facilitate that migrants become and feel socially embedded after migration.

Indeed, as individuals are usually relatively socially isolated after migration, the extent to which their heritage culture stimulates that they *establish new relationships* may be particularly relevant for their loneliness. We hence focus on the notion of *relational mobility* (Yuki & Schug, 2012) as part of migrants' heritage culture. Relational mobility usually describes the extent to which a socioecological environment provides individuals with opportunities to meet new others and, as such, how much choice with respect to social relationships they have. To better understand differences in migrants' susceptibility to loneliness, we focus on *heritage relational mobility* - that is, relational mobility in the culture that migrants were socialized in, and that they have thus internalized to some extent.

Specifically, we hypothesize that migrants from heritage cultures with higher relational mobility should be less susceptible to loneliness after migration, at least when moving to a social context with higher relational mobility.¹ We reason that these individuals should have learnt and be more used to creating new social relationships in their heritage culture. They should hence have acquired social skills and assumptions about social relationships that are necessary to avoid social isolation in the host culture. It is relevant to study this potential advantage in a host culture *with higher relational mobility* because many migrants move to such cultural contexts (e.g., Northern America, Australia, or Europe; UNESCO, 2017; UN DESA, 2019). In two cross-sectional studies, we hence examine the relation between heritage relational mobility and loneliness among student migrants in the Netherlands - a context that is relatively high in relational mobility (Thomson et al., 2018). In each study, we sample from two distinct student migrant groups (i.e., German and Chinese students) to examine whether the *individual-level* association we are interested in replicates across groups with quite different broader cultural backgrounds.

A cultural-psychological analysis of loneliness among migrants

Despite being experienced by most humans across the world at some point in their lives (Rokach & Bacanlı, 2001), loneliness seems to be an important risk factor for mental and physical health (Cacioppo et al., 2015; Richard et al., 2016), for an unhealthy life style (Smith & Victor, 2018), and for premature mortality (Holt-Lunstad et al., 2015). Loneliness is about *feeling* lonely rather than being alone. We hence adopt a definition of loneliness as the *feeling* of being cut-off or separated from others (Hays & DiMatteo, 1987) and thus as *perceived* social isolation (VanderWeele, Hawkey, & Cacioppo, 2012). Nevertheless, although loneliness can have many different causes (Rokach, 1988), high-risk groups such as the elderly, those living in single households, or, as in the current case, migrants (Oishi et al., 2013), are usually defined by their higher risk of being alone or lacking social relationships.

Indeed, when moving to a different country, individuals are removed from their social networks, close others, and the cultural environment they are used to (Sawir et al., 2008). At least temporarily, they are socially isolated while in the stressful situation of having to adapt to a new cultural environment. As such, migrants are particularly at risk for homesickness, impaired well-being, or loneliness (e.g., Bender, van Osch, Slegers, & Ye, 2019; Oishi et al., 2013; Sawir et al., 2008; van den Broek & Grundy, 2017; van Tilburg & Vingerhoets, 2007). To avoid chronic loneliness, it is essential for them to establish new social relationships in their host culture (Ernst & Cacioppo, 1999; Perlman & Peplau, 1981, 1984; Sawir et al., 2008; Smith & Khawaja, 2011). For instance, international students in the US who had more friendships with host nationals reported less loneliness (Gareis, Merkin, & Goldman, 2011) and lower homesickness (Hendrickson, Rosen, & Aune, 2011). Similarly, Taiwanese teenage sojourners in Canada indicated experiencing less loneliness and less acculturative stress if their *interpersonal competence* was higher (i.e., if they had more social relations with other sojourners and Canadians - including less difficulties to make new friends in the host culture, more perceived support by others, or a stronger sense of belonging to a group; Kuo & Roysircar, 2006). We suggest that this process of establishing new relationships in the host culture can be facilitated or hampered by migrants' heritage culture.

Specifically, we propose that an important characteristic of migrants' heritage culture is relational mobility (Yuki & Schug, 2012). The socio-ecology of cultures higher in relational mobility offers individuals more opportunities to meet new others, and more freedom of choice regarding whom to relate to. By contrast, lower relational mobility offers less such opportunities and choice. Relational mobility hence consists of two distinct yet related aspects: *opportunities to meet new people* and *freedom of choice in interpersonal relationships* (Thomson et al., 2018; Yuki et al., 2007). Relational mobility tends to be higher in Anglophone countries, South America, or Western Europe, and to be lower in East Asia, the Middle East (except for Israel), or North Africa (Thomson et al., 2018). These different levels of relational mobility should then imply differences in cultural norms about social relationships (Heu, Hansen, & van Zomeren, 2020) and influence how individuals feel, think, and behave (e.g., Chiu et al., 2011; Kito, Yuki, & Thomson, 2017; Thomson et al., 2018).

¹ Higher heritage relational mobility should more strongly protect from loneliness if present relational mobility is higher (versus lower) because more proficiency with meeting new people and forming new relationships, for example, should only enhance chances of establishing new relationships if there are opportunities for it. As such, individuals who know how to establish new relationships and expect others to also be interested in doing so may not only have no advantage in cultures with lower relational mobility, but they may even be at a higher risk for loneliness due to their different expectations (de Jong-Gierveld, 1987; Perlman & Peplau, 1981, 1984).

Different from relational mobility as characteristic of a current socioecological environment or as norms about social relationships in the present cultural environment (Heu, Hansen, & van Zomeren, 2020), we focus on *heritage* relational mobility. Heritage relational mobility summarizes opportunities to meet new others and individual freedom to choose one's own social relationships in the culture in which migrants grew up and were socialized in. After all, even if individuals move away from the context in which they were socialized, they should have internalized certain cultural norms of their heritage culture, and these should impact on how they generally perceive and act upon opportunities for relationships (in line with Zhang & Li, 2014). Such socialized tendencies and expectations might then turn out to be more or less adaptive in a novel cultural environment. Specifically, heritage relational mobility might facilitate that migrants become socially embedded in their host societies, as they should be more used to and proficient in creating new social relationships. That is, migrants with higher heritage relational mobility may have developed social skills and assumptions about social relationships throughout their cultural socialization that may help them establish new social relationships, also after migration.

Indeed, Anglo-Australian students or Southern European migrant students in Australia, who should have higher heritage relational mobility (Thomson et al., 2018), reported higher social self-efficacy (i.e., higher confidence in their ability to interact with others in a way that allows them to form and maintain social relationships; Smith & Betz, 2000) and less loneliness than Chinese overseas students, who should have lower heritage relational mobility (Leung, 2001). Furthermore, individuals in cultures that are higher in relational mobility have been found to self-disclose more and seem to more explicitly ask for social support (Kito et al., 2017). This is relevant because more self-disclosure can be viewed as a means of establishing new relationships (at least in cultures that are higher in relational mobility), while both more self-disclosure and more social support seem to have the potential to protect from loneliness (Bender, van Osch, Slegers, & Ye, 2019; Wei, Russell, & Zakalik, 2005). Finally, individuals in contexts with higher *residential* mobility, which is strongly related to higher relational mobility (Thomson et al., 2018), were found to be more motivated to expand their social networks - among others because of anticipated loneliness (Oishi et al., 2013). In sum, different tendencies and skills that are typical of individuals from cultures with higher relational mobility (and that they have arguably acquired during their cultural socialization), are likely to be adaptive when aiming to become socially embedded in a novel social environment. Higher relational mobility in migrants' heritage culture might thus help migrants to socially connect to others in the new environment and might hence protect them from loneliness (at least if the new environment is characterized by higher relational mobility). Conversely, lower relational mobility in migrants' heritage culture might put them at risk for loneliness.

The current research

This research aimed at investigating whether migrants' higher heritage relational mobility is related to lower loneliness in a host culture with comparatively high relational mobility (i.e., Dutch culture; Thomson et al., 2018). To that aim, we sampled student migrants² in the Dutch city of Groningen. As core indicators of heritage relational mobility, we focused on perceived relational mobility in migrants' families (specifically, among their parents; Study 1 and 2) and among their peers in their village or city of origin (Study 2). These are two relevant groups in which cultural socialization takes place (Grusec & Hastings, 2014), meaning that they are likely to have shaped the ways migrants think and go about their social relationships. Our two indicators should hence be suitable indicators of heritage relational mobility, while the use of *two different* indicators enables an evaluation of convergent validity.

Since mechanisms underlying loneliness (i.e., what makes individuals feel lonely) may be quite different depending on the broader cultural context student migrants are from (Henrich, Heine, & Norenzayan, 2010), we aimed to replicate the individual-level associations we were interested in (i.e., between heritage relational mobility and loneliness) in two different cultural groups. We sampled from student migrants with either a German or Chinese cultural background as two of the largest groups of international students in Groningen. They share the experience of having moved away from their home country, their current living environment, the use of English as language of their studies, and certain demographic characteristics (i.e., age, education level).

However, compared to German students, Chinese students should be geographically more distant from their families and friends at home, and should encounter larger differences between the Dutch and their heritage culture. Importantly, they should also originate from a culture lower in relational mobility (Yuki & Schug, 2012). Although there is no direct data available for China, relational mobility is generally low in East Asian countries, with a particularly low level in Hong Kong, for example (Thomson et al., 2018). By contrast, relational mobility seems to be moderate in Germany, with slightly lower levels than in other European countries, yet higher levels than in East Asian countries. This set-up with two samples from different cultural backgrounds enabled a systematic and real-life test of our hypothesis that higher heritage relational mobility relates to lower loneliness within two quite different student migrant groups.

² Clearly, the group of migrants is diverse, comprising, among others, refugees, working migrants, or young people who specifically move with the aim of studying abroad. We focused on the latter group in this study, which some refer to as *student sojourners* (Smith et al., 2006) to accommodate that most of these students move temporarily only. In this research, we prefer to use the term *student migrants* because all students are clearly migrants (i.e., all of them have moved to a different country), but it is unclear whether they (intend to) move back to their home countries.

Method

Design and sample

We conducted two cross-sectional survey studies with data collection between October and December 2017 (Study 1) and between April and May 2018 (Study 2), as part of two bachelor thesis projects at the University of Groningen (the Netherlands). This step-wise design allowed us to refine measurement between data collection for Study 1 and 2.

Specifically, in Study 1, we only assessed *parents'* relational mobility, which should be an important indicator of the culture in which students had been brought up and socialized. Despite the relevance of such an initial socialization context, we suspected that relational mobility among *peers* from student migrants' city or village of origin might be another good, if not better, indicator of heritage relational mobility. After all, student migrants tend to interact more with others from their own than their parents' generation after migration. Furthermore, students' perceptions of their parents' relational mobility may not only be influenced by culture, but also by their parents' personal characteristics (Yuki et al., 2007). Therefore, in Study 2, we assessed indicators of heritage relational mobility among both parents *and* peers in the heritage culture to assess their convergent validity. Both studies were approved by the Ethical Committee of Psychology at the < UNIVERSITY NAME > .

The final sample in Study 1 consisted of 118 students who indicated to have grown up in Germany (i.e., German students; 68.64 % women, 31.36 % men) and 97 students who indicated to have grown up in China (i.e., Chinese students; 65.98 % women, 32.99 % men). In Study 2, the final sample consisted of 119 German students (65.55 % women, 32.77 % men) and 92 Chinese students (56.52 % women, 42.39 % men). German participants were slightly younger, with $M (SD) = 22.09 (2.35)$ versus $M (SD) = 22.99 (3.09)$ in Study 1 and $M (SD) = 22.77 (1.92)$ versus $M (SD) = 24.12 (3.68)$ in Study 2.³ Also, German participants had, on average, lived in the Netherlands longer than Chinese participants, $M (SD) = 2.38 (2.48)$ versus $M (SD) = 1.75 (1.94)$ years in Study 1 and $M (SD) = 2.86 (2.31)$ versus $M (SD) = 2.11 (1.83)$ years in Study 2. Nevertheless, German and Chinese students had spent similar shares of their lives in their country of origin (i.e., years spent in country of origin divided by age), $M (SD) = 0.81 (0.18)$ versus $M (SD) = 0.85 (0.14)$ in Study 1 and $M (SD) = 0.83 (0.15)$ versus $M (SD) = 0.85 (0.10)$ in Study 2.

We note that we encountered some difficulty with recruiting Chinese students, mostly because of the smaller size of this group. To determine sample sizes, we therefore considered both practical constraints and the results of a power analysis using the software package *g*power*). The power to detect a small-medium effect of $r = .30$ was higher than .80 in each of the samples. As power to detect a smaller effect required a larger sample than this (such as at least 153 participants for $r = .20$), we decided to also analyze the combined results from Study 1 and 2 in a mini meta-analysis.

Procedure

Students of the University of Groningen or the Hanze University of Applied Sciences in Groningen (the Netherlands) were personally invited to participate in an online study on social relationships and well-being (to avoid self-selection based on levels of loneliness). They were recruited in public areas of university buildings, undergraduate courses or via the distribution of survey links through email or social media. Students participated either without compensation (if recruited online) or received a chocolate bar as incentive (if recruited in person). Participants were carefully debriefed after completing the survey and received information on a telephone helpline in case they would be unwell after the study. Students who had participated in Study 1 were not eligible to also participate in Study 2.

Questionnaires included (1) demographic questions, (2) measures of well-being (in line with the framing of the study) and loneliness, (3) a set of items to check for participants' attention, and (4) measures of heritage relational mobility. As participants followed their university studies in English, questionnaires were administered in that language only. For completed questionnaires, median completion times were lower for German students, with 12.28 versus 13.73 minutes in Study 1, and 13.50 versus 18.31 minutes in Study 2.

Materials

Loneliness

To assess loneliness, we administered the ULS-6 scale (Neto, 2014), a short version of the UCLA loneliness scale, including items such as "People are around me but not with me" or "I feel isolated from others", on a scale from 1 (*never*) to 4 (*often*). Furthermore, we added "There is no one I can turn to" as another item from the ULS-8 scale (Hays & DiMatteo, 1987). This item revolves around the lack of supportive relationships in times of need, and thus captures a central aspect of loneliness that is otherwise not covered by items of the ULS-6 (in line with Heu, van Zomeren, & Hansen, 2019, (Heu, Hansen, & van Zomeren, 2020)). Furthermore, given that loneliness is a subjective experience, we also applied two self-report measures of loneliness ("How lonely do you feel in general?" and "How lonely did you feel during the last two weeks") on a scale ranging from 1 (*not at all*) to 4 (*very much*). We omitted one item of

³ We generally sampled student migrants irrespective of their age. However, we had to exclude data from participants who indicated to be younger than 16 years because data processing would have required parental consent. Note that, based on the typical age of finishing secondary school in China and Germany, only one participant was below the age of 18, and only nine were older than 30 years (with the oldest participant being 34 years old).

Table 1
Means and Standard Deviations for Key Measures in Both Studies.

Sample	Study 1		Study 2	
	German	Chinese	German	Chinese
Loneliness	1.75 (0.58)	2.04 (0.59)	1.75 (0.55)	1.94 (0.59)
Parents' relational mobility	4.71 (0.96)	4.33 (0.93)	4.54 (1.11)	4.04 (1.01)
Meet new people	4.56 (1.21)	4.48 (1.29)	4.48 (1.30)	4.22 (1.11)
Choose relationships	4.82 (1.05)	4.23 (0.99)	4.57 (1.18)	3.92 (1.22)
Peers' relational mobility			4.37 (1.02)	4.31 (0.91)
Meet new people			4.16 (1.21)	4.51 (1.12)
Choose relationships			4.53 (1.05)	4.17 (0.99)

Note. “Meet new people” refers to the subscale of opportunities to meet new people, “choose relationships” to the subscale of freedom of choice in interpersonal relationships.

the ULS-6 scale (“I feel part of a group of friends”) due to its weak loadings on the loneliness factor and because it slightly decreased reliabilities in all samples (in line with Heu, van Zomeren, & Hansen, 2019; (Heu, Hansen, & van Zomeren, 2020)). The measure of loneliness finally comprised eight items and had excellent reliabilities (ranging from $\alpha = .86$ to $\alpha = .88$, see Table 1 in the supplemental materials).

Heritage relational mobility

We assessed perceptions of relational mobility with a simplified version of the 12-item scale by Yuki et al., 2007; Thomson et al., 2018; see (Heu, Hansen, & van Zomeren, 2020), comprising evaluations of opportunities to form new and choose relationships in a specific cultural group. Items included “It is easy for them to meet new people.” or “Even if they want to leave, they often have to stay in groups they do not like.”, on a scale from 1 (*totally disagree*) to 6 (*totally agree*) in Study 1, and 1 (*totally disagree*) to 7 (*totally agree*) in Study 2.⁴ Although items are usually combined into one measure of relational mobility, they can also be divided into two subscales with five items for *opportunities to meet new people* and seven items for *freedom of choice in interpersonal relationships*.

Furthermore, in both studies, we specified the group that the items should refer to, as suggested by Yuki et al. (2007). Relational mobility is usually measured by asking individuals about relationships of general others in the broader collective they belong to rather than about individuals' own perceived opportunities. The aim is to avoid that personal characteristics such as introversion confound the measurement of relational mobility. As answering questions about an abstract collective may, however, be remote from individuals' everyday ways of thinking, we anchored the scale to both concrete examples (i.e., parents; Study 1) and a broader collective (i.e., peers; Study 2).

Specifically, we wanted to assess the level of *heritage* relational mobility as we assumed that this would shape how student migrants presently viewed and acted in their social relationships. As the family is one relevant socialization context (Grusec & Hastings, 2014), we asked about participants' perception of their parents' level of relational mobility in Study 1. Because participants indicated to have difficulty answering questions for both their parents simultaneously, we asked about the one parent they felt closer to (or pick one if they felt equally close to both) in Study 2. Furthermore, we additionally wanted to assess heritage relational mobility in another relevant cultural reference group that should be closer to student migrants' own situation, as to enable an evaluation of convergent validity in Study 2. We thus added a measure of relational mobility among participants' peers in their heritage culture (i.e., “other people who are approximately your age and live in the city / village you have grown up in”; in line with (Heu, Hansen, & van Zomeren, 2020)). Peers should be relevant for socialization, yet more similar to participants in terms of life situation and social interactions than their parents. Across all samples and different reference groups, Cronbach's α s for the relational mobility scales were excellent (see Table 1 in the supplementary materials), ranging from $\alpha = .80$ to $\alpha = .90$. Reliabilities for subscales of the two heritage relational mobility scales still ranged from adequate to very good, with α s between .69 and .88.

Demographic variables

We included questions about age, gender, highest education level, country of origin, parents' country of origin, duration of stay in Groningen (Study 1) or the Netherlands (Study 2), and satisfaction with the participant's financial situation (on a scale from 1 – *not at all* to 7 – *very much*).

Results

Results study 1

Preliminary analyses such as missing data analysis, assumption checks, balance tests, factor analyses for construct validity and measurement invariance testing for both studies can be found in the supplementary materials. Generally, most scales seemed to lack

⁴ Scaling for relational mobility differed between Study 1 and 2 as it was aligned with anchors for other scales in each of the studies. Items from Study 1 were re-coded in line with the scaling of Study 2.

Table 2
Correlations between Subscales of Heritage Relational Mobility Measures and Loneliness.

	Study 1		Study 2	
	German	Chinese	German	Chinese
Parents' relational mobility	-.25**	-.27**	-.23*	-.16
Meet new people	-.12	-.28**	-.12	-.12
Choose relationships	-.30**	-.17	-.27**	-.15
Peers' relational mobility			-.19*	-.15
Meet new people			-.09	-.17
Choose relationships			-.25**	-.10

Note. "Meet new people" refers to the subscale of opportunities to meet new people, "choose relationships" to the subscale of freedom of choice in interpersonal relationships. * $p < .05$, ** $p < .01$.

measurement invariance across the samples, suggesting that comparisons of results between different samples need to be made with caution (see also Heu, van Zomeren, & Hansen, 2019).

Descriptive statistics can be found in Table 1 (additional sample characteristics are displayed in Table 2 of the supplementary materials). Whereas 33.05 % of the student migrants in the German sample indicated that, in general, they did not feel lonely in their present lives, this only applied to 16.50 % of the Chinese sample. Contrarily, in the German sample, 3.36 % reported never to have felt lonely in their lives as compared to as many as 8.25 % in the Chinese sample.

To test our hypothesis that higher relational mobility would imply less loneliness, we conducted regression analyses with relational mobility as independent variable and loneliness as dependent variable. In both samples, parents' relational mobility was negatively and significantly related to participants' loneliness, German sample, $\beta = -0.25$, $b = -0.15$, $SE = 0.05$, 95 % CI [-0.26; -0.05], $t = -2.81$, $R_{adj}^2 = .06$, $F(1, 116) = 7.91$, $p = .006$, Chinese sample, $\beta = -.27$, $b = -0.17$, $SE = 0.06$, 95 % CI [-0.30; -0.05], $t = -2.73$, $R_{adj}^2 = .06$, $F(1, 95) = 7.48$, $p = .008$. Put differently, student migrants who perceived that their parents had more opportunities to meet new people and to choose whom they related to, felt less lonely abroad.

To explore which of the two subscales of relational mobility was more relevant to the negative associations between relational mobility and loneliness, we examined correlations of both opportunities to meet new people and freedom of choice in interpersonal relationships (i.e., the two subscales of relational mobility) with loneliness (see Table 2). Despite the negative association between relational mobility and loneliness in both samples, this more detailed analysis revealed some intriguing differences. Whereas in the German sample, it was freedom of choice in interpersonal relationships that was more strongly related to lower loneliness than opportunities to meet new people, the opposite emerged in the Chinese sample (i.e., opportunities to meet new people were more strongly related to lower loneliness than freedom of choice in interpersonal relationships). However, as these findings resulted from explorative analyses and might thus have been sample-specific, we wanted to examine them in Study 2 with an additional pair of samples with the same cultural backgrounds as in Study 1.

Results study 2

Similar to Study 1, 24.37 % of the German students indicated that they generally did not feel lonely in their current lives, as compared to 18.48 % of the Chinese students. Furthermore, 3.36 % of the German and 2.17 % of the Chinese students reported to never have felt lonely in their lives. Descriptive statistics are displayed in Table 1 and the supplementary materials.

Like in Study 1, parents' relational mobility was negatively related to participants' loneliness, yet significantly so only in the German sample, $\beta = -.23$, $b = -0.11$, $SE = 0.05$, 95 % CI [-0.20; -0.02], $t = -2.49$, $R_{adj}^2 = .04$, $F(1, 117) = 6.22$, $p = .014$, Chinese sample, $\beta = -.16$, $b = -0.09$, $SE = 0.06$, 95 % CI [-0.21; 0.03], $t = -1.49$, $R_{adj}^2 = .01$, $F(1, 90) = 2.22$, $p = .140$. We then examined how peers' relational mobility was related to student migrants' loneliness. A similar pattern as for parents' relational mobility emerged, with negative associations between relational mobility and loneliness in both samples, although this was statistically significant for the German sample only, $\beta = -.19$, $b = -0.10$, $SE = 0.05$, 95 % CI [-0.20; -0.01], $t = -2.12$, $R_{adj}^2 = .03$, $F(1, 117) = 4.48$, $p = .037$, Chinese sample, $\beta = -.15$, $b = -0.09$, $SE = 0.07$, 95 % CI [-0.23; 0.04], $t = -1.39$, $R_{adj}^2 = .01$, $F(1, 90) = 1.92$, $p = .169$.⁵ Taken together, findings from both Study 1 and 2 suggest that higher heritage relational mobility relates to lower loneliness after migration (although only by non-significant trends in the Chinese samples, which suggests that they need to be interpreted with caution).

We then tested whether the findings for the two subscales of parents' relational mobility were in line with the explorative findings from Study 1 (see Table 2). For the German sample, freedom of choice in interpersonal relationships was again more strongly related to loneliness than opportunities to meet new people. However, in the Chinese sample, associations between the two subscales and

⁵ In main analyses for both studies, we also controlled for students' satisfaction with their financial situation and the duration of their stay in the Netherlands. For one, differences in financial satisfaction may confound associations between heritage relational mobility and loneliness, because lower affluence may foster both lower relational mobility (Thomson et al., 2018) and higher loneliness (e.g., Hansen and Slagsvold, 2015). Furthermore, longer duration of stay in a host culture may reduce the impact of heritage culture on ways of relating to others, and loneliness. However, results did not change when controlling for these variables, and we thus only report models without control variables.

loneliness did not seem to differ: although neither of the correlations were significant (implying that caution is warranted when interpreting these findings), correlation coefficients suggested negative associations of similar strengths. Also for *peers'* relational mobility, freedom of choice in interpersonal relationships was more strongly negatively related to German students' loneliness than opportunities to meet new people. By contrast, in the Chinese sample, both subscales seemed again similarly related to loneliness, yet also not significantly so (opportunities to meet new people seemed only slightly more strongly related to loneliness than freedom of choice in interpersonal relationships). Thus, associations between relational mobility (and its two subscales) and loneliness were quite similar for relational mobility as perceived among both parents and peers.

Mini meta-analysis across studies

Despite these consistencies across studies and samples, one may argue that our analyses for the different migrant groups were somewhat underpowered. We therefore conducted a mini meta-analysis (in line with Goh, Hall, & Rosenthal, 2016) to evaluate the consistency of the findings across the studies and migrant groups. To test effects, we applied *t*-tests (for random effects) and Stouffer's *Z*-tests (for fixed effects). Effect sizes widely converged, but as random effects tests are usually more conservative, random and fixed effects tests resulted in somewhat different conclusions about statistical significance (which is not surprising given the small number of samples). The pattern was nevertheless the same: Across both studies, parents' relational mobility was negatively related to loneliness with a small effect size, German sample: $M r = -.24^6$, $t(1) = -17.01$, $p = .037$, $Z = -3.34$, $p < .001$, Chinese sample: $M r = -.21$, $t(1) = -3.70$, $p = .168$, $Z = -2.49$, $p = .007$. For German students, opportunities to meet new people, $M r = -.12$, $t(1) = -348.93$, $p = .002$, $Z = -1.23$, $p = .110$ were much less correlated with loneliness than freedom of choice in interpersonal relationships, $M r = -.28$, $t(1) = -17.51$, $p = .036$, $Z = -4.09$, $p < .001$. Yet for Chinese students, both subscales seemed similarly related to loneliness, opportunities to meet new people: $M r = -.20$, $t(1) = -2.41$, $p = .025$, $Z = -2.22$, $p = .013$ versus freedom of choice in interpersonal relationships: $M r = -.16$, $t(1) = -10.96$, $p = .058$, $Z = -1.64$, $p = .051$. As such, the mini meta-analysis confirms our hypothesis that migrants' higher heritage relational mobility relates to lower loneliness. It also confirms that freedom of choice in interpersonal relationships may be more relevant for loneliness than opportunities to meet new people among German, yet not among Chinese, student migrants.

General discussion

Across samples of Chinese and German student migrants in the Netherlands, we found that *higher* heritage relational mobility was related to *lower* loneliness. This suggests that coming from cultural settings in which it is common to meet new people, and possible to individually choose one's own interaction partners, can potentially protect migrants from feeling lonely - at least when their host culture is also characterized by higher relational mobility (i.e., if it offers opportunities to meet new people). As such, this research is the first to examine whether and how relational mobility, as a characteristic of one's heritage culture, relates to loneliness in the high-risk group of migrants, and the first to suggest that it might protect migrants from feeling lonely.

Although the relation between heritage relational mobility and loneliness was similar across two migrant groups from quite different broader cultural settings, there were also differences between samples: Freedom of choice in interpersonal relationships seemed more strongly related to loneliness than opportunities to meet new people only among German, but not among Chinese student migrants. This may suggest that individual choice, which should be more relevant in more individualistic cultures (Oyserman, Coon, & Kimmelmeier, 2002), might be particularly protective for German, but less so for Chinese students (German culture has been described as more individualistic than Chinese culture; House, Hanges, Javidan, Dorfman, & Gupta, 2004). However, this finding needs to be interpreted with caution and future research is necessary for a more robust examination of such cultural differences.

Theoretical and empirical implications

Shedding light on whether heritage relational mobility can impact on migrants' loneliness, this research adds new insights into cultural-psychological risk and protective factors for loneliness. Our results were not only similar across two migrant groups with quite different cultural backgrounds (with higher loneliness among Chinese student migrants than any other international student group; e.g., Leung, 2001), but are also in line with findings in non-migrant populations in four European countries (Heu, Hansen, & van Zomeren, 2020). This suggests that fostering higher relational mobility might help to protect individuals - both migrants and non-migrants - from loneliness, although mechanisms should differ. For migrants, we suggest that it is proficiency with forming new social relationships that may help protect from loneliness (in line with Ernst & Cacioppo, 1999; Parker & Seal, 1996). By contrast, non-migrant populations might profit from the notion that they can, in their current social environments, replace lower-quality relationships by more satisfying ones, if necessary (Heu, Hansen, & van Zomeren, 2020). As such, relational mobility may be an important cultural-psychological predictor of loneliness, both as characteristic of past and present cultural environments.

Furthermore, our findings suggest that, depending on the broader cultural backgrounds that individuals are from (e.g., German or Chinese culture), specific characteristics of their heritage culture can have different implications for their loneliness. Indeed, a consistent difference between our two culturally quite different samples emerged regarding the subscales of heritage relational

⁶ The correlation coefficient for the fixed effects analysis was $r = -.22$. For all other random and fixed effects analyses, correlation coefficients converged.

mobility: Freedom of choice in interpersonal relationships in the heritage culture was more strongly negatively related to loneliness than opportunities to meet new people in the German, but not in the Chinese samples. This may be explainable by broader cultural differences in the relevance of individual choice, as implied by differences in individualism-collectivism (House et al., 2004) or independent versus interdependent self-construal (Markus & Kitayama, 1991). For instance, individual choice regarding one's relationships seems to be more valued and prevalent in more individualistic (e.g., German culture; House et al., 2004) than in more collectivistic cultures (e.g., Chinese culture; House et al., 2004; Oyserman et al., 2002; Swader, 2018), and among individuals with more independent self-construals (as one would expect in a German sample; Markus & Kitayama, 1991) than among those with more interdependent self-construals (as one would expect in a Chinese sample; Markus & Kitayama, 1991; Pöhlmann, Carranza, Hannover, & Iyengar, 2007). Indeed, individuals with more interdependent self-construals seem to prefer to choose for others rather than for themselves (Pöhlmann et al., 2007). In line with that, and more specific to Chinese culture, opportunities for, and relevance of individual choice regarding one's relationships may be reduced by a cultural emphasis on intergenerational reciprocity and responsibilities (*filial piety* or *xiào*; Jones, Lee, & Zhang, 2011; Fuligni & Zhang, 2004). Together, this suggests that individual choice might be less relevant for outcomes such as loneliness in Chinese than in German culture. At the same time, opportunities to expand on existing relationships by new relationships (i.e., the second subscale of relational mobility) may be a comparatively more important means to compensate for low-quality relationships (with a comparatively higher relevance for loneliness in Chinese than in German culture). More generally, this indicates that characteristics that protect or put individuals at risk for loneliness in one cultural group may not have the same effect in groups with a different cultural background.

One intriguing and encouraging finding was that heritage relational mobility was negatively related to loneliness, *irrespective* of whether it was assessed for parents or peers in the heritage culture. This finding suggests the validity of the different indicators we used to assess heritage relational mobility. Although we expected migrants' interactions with peers in their heritage culture to be more similar and hence possibly more relevant to their current interactions in the host society, effects for both measures were similar in strength. This may also highlight the relative importance of the family as socialization context, and thus as a channel for transmitting key aspects of one's heritage culture (Grusec & Hastings, 2014).

Although we theoretically suggest that student migrants from heritage cultures with higher relational mobility should feel less lonely because of getting socially embedded after migration more easily, the precise *explanatory mechanism(s)* require more attention in future research. We suggest that individuals from cultures with higher heritage relational mobility may self-disclose more, trust unknown others more, or may be more likely to seek social support (Kito et al., 2017). As such, it is possible that, through the process of socialization, they have acquired certain personal tendencies and characteristics (e.g., higher extraversion) that may protect them from loneliness (at least in a context of higher relational mobility). However, a possible alternative mechanism may be a higher cultural fit between heritage and host culture. For instance, higher heritage relational mobility may be more adaptive in the host context we studied (the Netherlands), exactly because Dutch culture is relatively high in relational mobility (Thomson et al., 2018). Through lower cultural distance between heritage and host culture, this may increase the ease of becoming integrated in the new social context (e.g., Smith & Khawaja, 2011; Ward & Geeraert, 2016), and imply a lower risk of feeling *culturally* lonely (i.e., the loneliness that results from missing the cultural environment one prefers or is used to; Sawir et al., 2008). Understanding such mechanisms better may provide more precise starting points for interventions against loneliness among student migrants.

Practical implications

Present and past (Heu, Hansen, & van Zomeren, 2020) findings suggest that higher relational mobility could help to protect from loneliness. This implies that assumptions about social relationships (i.e., beliefs about and expectations from social relationships) and the behaviours that are related to relational mobility, may be useful starting points for interventions against loneliness – at least for individuals who currently live in cultures with relatively high relational mobility. That is, loneliness may be prevented or reduced by fostering tendencies that are typical of individuals in cultures with higher relational mobility (e.g., higher trust in unknown others or higher self-disclosure towards friends or romantic partners; Kito et al., 2017; Schug, Yuki, & Maddux, 2010; Thomson et al., 2018). Also, loneliness may be prevented or reduced by promoting *the notion* that there are opportunities to meet new people and form new relationships, or that individuals themselves can choose to leave unsatisfying relationships.

Importantly, however, our findings are not intra-individual, but inter-individual. That is, the finding that student migrants with higher heritage relational mobility indicated to feel less lonely does not necessarily imply that those with lower heritage relational mobility *profit* from beliefs or behaviour implied by higher relational mobility. After all, they may have different social needs, and norms of relational mobility may be at odds with other related norms that these individuals hold. Although interventions can, hence, specifically target those who describe lower relational mobility in their present or past cultural environments (because of a potentially higher risk for loneliness; (Heu, Hansen, & van Zomeren, 2020)), intra-individual studies will first need to examine which interventions can decrease loneliness in these specific groups.

Limitations and future directions

We tend to think of higher relational mobility as a potential protective factor for loneliness, but the correlational design of this study leaves room for different interpretations. Most importantly, lonely individuals have been found to interpret social situations and cues in more negative ways than non-lonely individuals (Cacioppo & Hawkey, 2009). Therefore, it is possible that they *perceive* their parents and peers to have fewer social opportunities or freedom to choose their relationships, but these perceptions might not reflect reality. Higher loneliness would then cause perceptions of lower heritage relational mobility, rather than lower heritage

relational mobility causing higher loneliness after migration. Future studies may hence aim to disentangle cause and effect (e.g., with longitudinal designs). Theoretically, however, the level of relational mobility from individuals' heritage culture should, at least to some extent, be internalized by them (Adams & Kurtiş, 2012), and, as such, impact on how they relate to, and what they expect from others. Since the way individuals relate to each other and their evaluations of social relationships can influence loneliness (Perlman & Peplau, 1981), heritage relational mobility should rather protect from loneliness than be its consequence or relate to it because of third variables only.

A potential issue with the validity of our findings regarding differences between the two subscales of heritage relational mobility is that we did not assess these two subscales separately. That is, freedom of choice in interpersonal relationships as the more ambiguous sub-scale may have been interpreted in the light of the other subscale (i.e., opportunities to meet new people), because items for both were mixed together when assessing heritage relational mobility. This would imply overly similar associations with loneliness. Indeed, freedom to choose whom one relates to is not only determined by the number of opportunities to create new social relationships, but also by norms about whether or not to hold on to established relationships, such as family relationships or long-lasting friendships (*relational stability*; (Heu, Hansen, & van Zomeren, 2020)). Notably, in a sample of non-migrants, individual freedom of choice regarding social relationships had different implications for loneliness depending on whether it was related to norms implied by relational mobility or relational stability. We thus recommend future research to also separately assess the two subscales of heritage relational mobility when aiming to explain loneliness, and to, furthermore, examine the association between *heritage relational stability* (i.e., the level of relational stability in migrants' background culture) and loneliness. After all, similar to higher heritage relational mobility, higher heritage relational stability might facilitate that migrants become socially embedded in their host culture: According to an attachment perspective, an increased sense of secure and safe relationships, as arguably implied by higher heritage relational stability, should facilitate that migrants explore social relationships in the host society more (Mikulincer & Shaver, 2007). As such, migrants with higher heritage relational stability may also be at a lower risk for loneliness.

As our samples consisted of student migrants in the Netherlands only, it is conceivable that our findings would have been different with other migrant samples and in other host cultures. For one, student migrants often intend to move back to their home countries after their studies. The prospect of returning to established social networks there may make these students less prone to feeling lonely, even if unable to establish new networks abroad. This suggests that heritage relational mobility might be more strongly related to lower relational mobility in other migrant groups than in the student migrant groups we investigated.

Furthermore, as mentioned, we have focused on a setting in which higher heritage relational mobility may be particularly adaptive due to the high level of relational mobility in the host culture itself. After all, the Netherlands are characterized by high relational mobility when compared to other countries of the world (Thomson et al., 2018). Also, (international) students tend to be genuinely interested in getting to know new others, and together create a culture that should be particularly high in relational mobility. Since most migrants move to contexts with higher relational mobility (UNESCO, 2017; UN DESA, 2019), and since we suspect that international communities are generally characterized by comparatively high levels of relational mobility (Oishi, Schug, Yuki, & Axt, 2015; Thomson et al., 2018), higher heritage relational mobility is likely to protect from loneliness in other contexts and migrant groups as well. Nevertheless, it may protect less or even put at risk for loneliness among migrants in host cultures with low relational mobility (e.g., in South-East Asian or North African countries; Thomson et al., 2018) or in different life situations (e.g., working migrants, refugees). After all, higher proficiency with creating new relationships should only prevent loneliness if there are *actual* opportunities to do so. Indeed, individuals who expect opportunities to form new relationships (due to higher heritage relational mobility) in cultural environments that do not actually provide these opportunities may even be at a *higher* risk for loneliness than those without such expectations (i.e., those with lower heritage relational mobility; Perlman & Peplau, 1981). We hence recommend future research to examine whether relational mobility in the host culture moderates the association between heritage relational mobility and loneliness.

Conclusion

Both Chinese and German student migrants in the Netherlands reported lower loneliness if they perceived that their heritage cultures offered more opportunities to meet new people or to individually choose one's social relationships. This suggests that migrants' heritage culture may impact on loneliness after migration, and that higher heritage *relational mobility* might protect from it. To counteract loneliness and related health problems in the high-risk group of migrants, relational mobility could hence be a promising starting point for the development of interventions in the future.

Declaration of Competing Interest

None.

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Appendix A. Supplementary data

Supplementary material related to this article can be found, in the online version, at doi:<https://doi.org/10.1016/j.ijintrel.2020.05.005>.

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